# Secondary Vertex Finding w/ RAVE

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- Updated procedure
  - Primary vertex finding
    →use all reconstructed SvtxTrack tracks in an event
    →vertex finding algorithm: adaptive method (single vertex mode)

  - Secondary vertex finding
    →search truth jet ($\Delta R=0.4$, $p_T>20$ GeV/c, $|\eta|<1.0$)
    →for a selected truth jet, put reconstructed SvtxTrack within $\Delta R<1.0$ into the vertex finder
    →obtain reconstructed vertices within a jet (adaptive method, multi vertex mode)
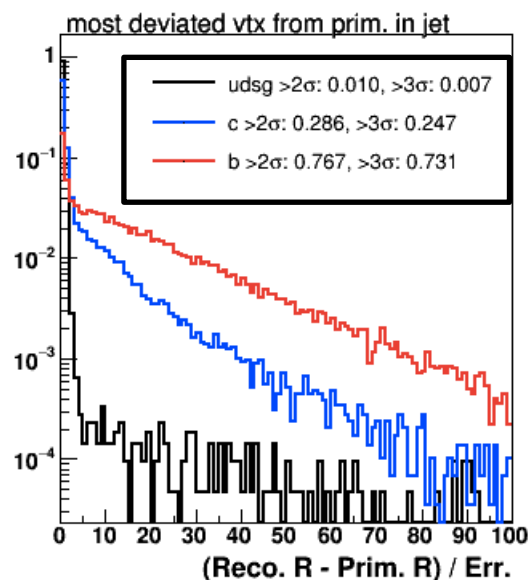   *truth jet having at least 1 vertex is considered as a reco. jet candidate
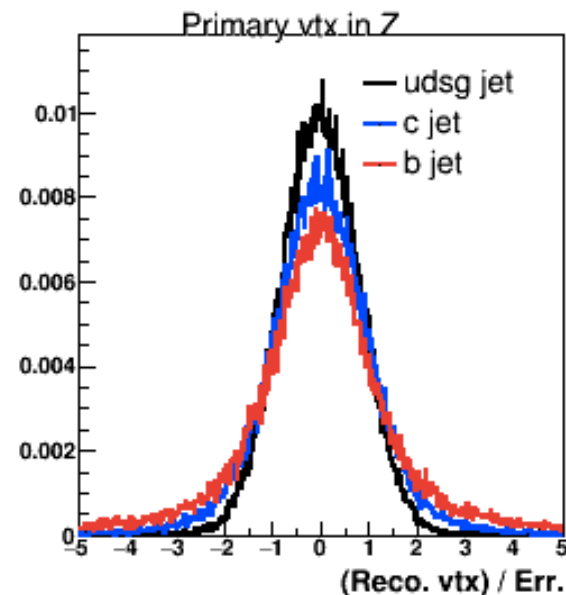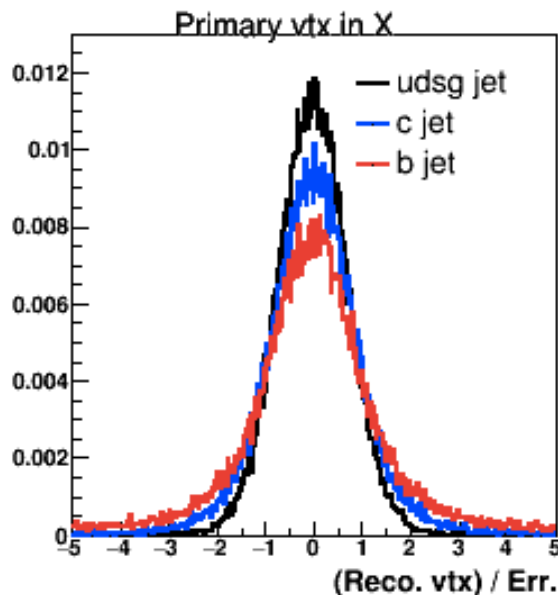
Deviation of secondary vertex

- Calculate standard deviation of between most deviated vertex (from prim. vertex) in a jet and primary vertex
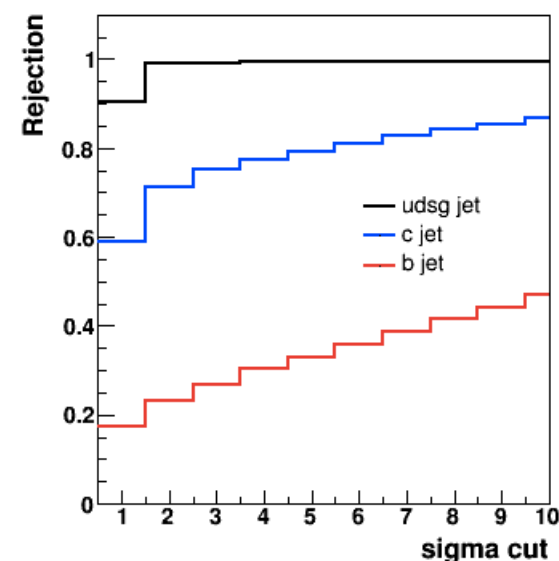
number of reco. vtx in a jet
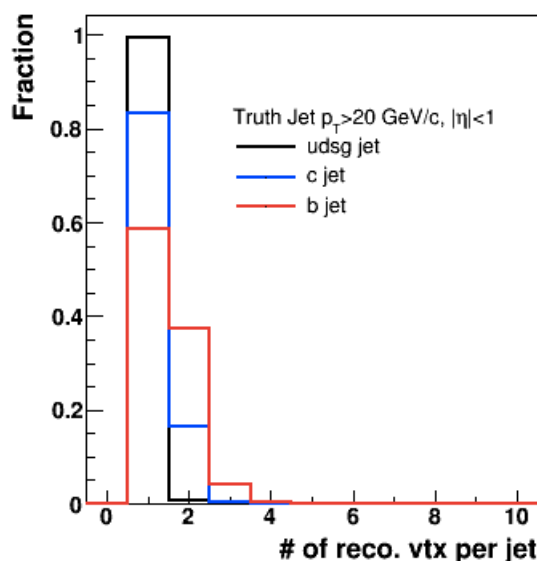
**standard deviation of most deviated vtx from prim. vtx**

**rejection w/ standard deviation cut**

udsg jet: 1% (w/ 2 sigma cut), 0.7% (w/ 3 sigma cut)
c jet: 28.6% (w/ 2sigma cut), 24.7% (w/ 3 sigma cut)
b jet: 76.7% (w/ 2 sigma), 73.1% (w/ 3 sigma cut)

Event cut (# of reco. vtx per event)

- Based on the CMS paper (arXiv:1510.03373), additional event cut is tested to enrich events including b-jets
    - perform the multi-vertex finding with all tracks in a event
    - reject events based on the number of reco. vertices
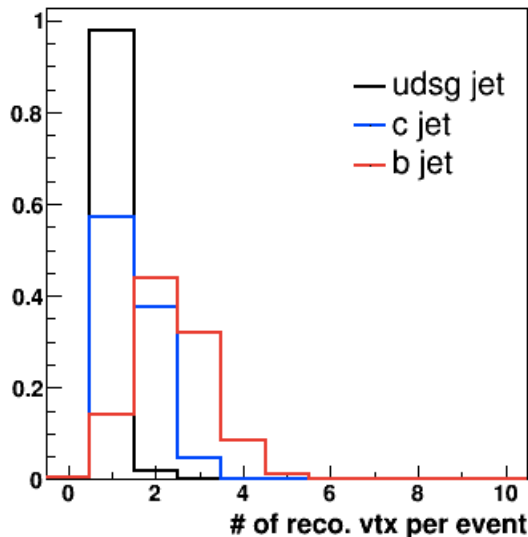
initial rejection is slightly better,
but similar performance with 2 or 3 sigma cut
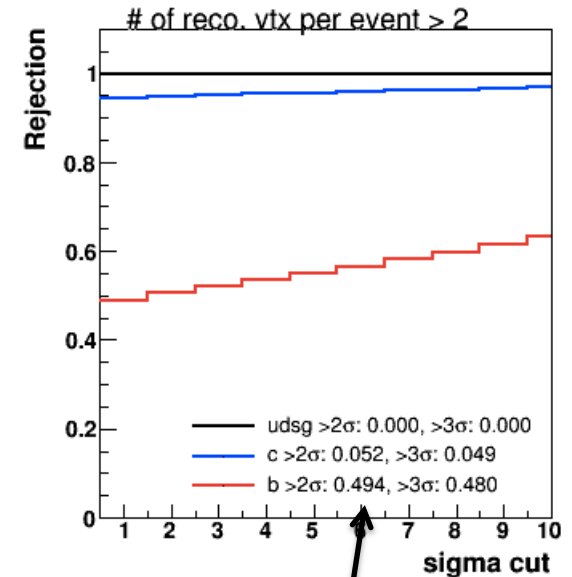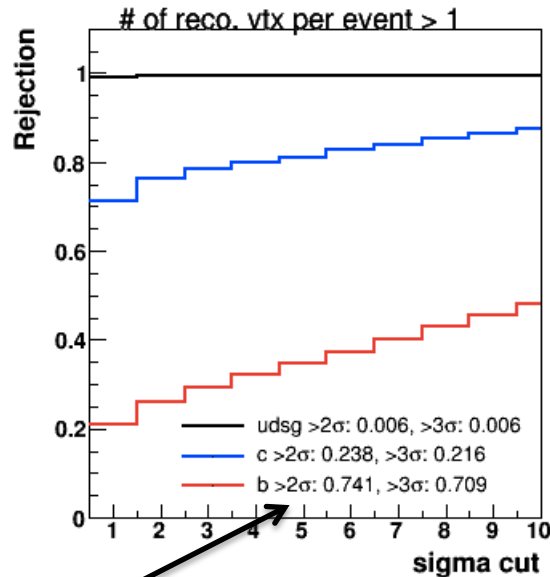
loose some efficiency,
but clearly enrich b-jets